

WHAT IS CLAIMED IS:

- 1 1. A package for providing high density storage, comprising:
2 a carrier housing for holding multiple storage devices proximate to one another
3 and aligned in a row; and
4 an access device, coupled to the carrier housing, for structuring access to physical
5 addresses of the multiple storage devices and providing access to each of the multiple
6 storage devices over one connection.
- 1 2. The package of claim 1, wherein the access device further comprises an
2 address aggregator for aggregating the physical addresses of the storage devices into
3 logical addresses and making the logical addresses available over one connection.
- 1 3. The package of claim 2, wherein the address aggregator is configured to
2 present the storage devices as a single storage device.
- 1 4. The package of claim 2, wherein the address aggregator is configured to
2 allowing each of the storage devices to be addressed individually using logical addresses.
- 1 5. The package of claim 1, wherein the carrier housing is configured to be
2 conformal to multiple storage devices to minimize the amount of space used.
- 1 6. The package of claim 1, wherein the carrier housing is configured to
2 provide an air channel for dissipating heat from multiple storage devices.

1 7. The package of claim 1, wherein the access device is configured to enable
2 partial population of the carrier housing with storage devices so that storage devices are
3 capable of functioning when the carrier housing is not fully populated.

1 8. The package of claim 1, wherein the carrier housing further comprises
2 fault indicators for allowing notification of an inoperable storage device.

1 9. The package of claim 8, wherein the fault indicators are battery-powered.

1 10. The package of claim 1, wherein the carrier housing further comprises
2 internal connectors for connecting internal devices.

1 11. The package of claim 10, wherein the internal connectors are configured
2 for at least one type of technology selected from the group comprising: serial advanced
3 technology attachment (SATA), serial attached SCSI (SAS), or Fibre Channel.

1 12. The package of claim 1, wherein the access device provides failure mode
2 data for problem diagnosis.

1 13. The package of claim 1, wherein the carrier housing further comprises a
2 cooling device.

1 14. The package of claim 1, wherein the carrier housing further comprises a
2 spring-loaded bracket for holding each storage device in place.

1 15. The package of claim 1, wherein the carrier housing is configured for
2 holding storage devices in an end-to-end alignment.

1 16. The package of claim 1, wherein the carrier housing is configured for
2 holding storage devices in a side-by-side alignment.

1 17. The package of claim 1, wherein the access device further comprises a
2 controller for virtualizing the logical addresses as at least one aggregate volume to
3 provide a layer of abstraction to the storage devices.

1 18. A package for aggregating electronic devices comprising:
2 means for holding multiple storage devices proximate to one another and aligned
3 in a row; and
4 means, coupled to the means for holding, for structuring access to physical
5 addresses of the multiple storage devices and providing access to each of the multiple
6 storage devices over one connection.

1 19. The package of claim 18, wherein the means for structuring further
2 comprises means for virtualizing the logical addresses as at least one aggregate volume to
3 provide a layer of abstraction to the storage devices.

1 20. The package of claim 18, wherein the means for structuring further
2 comprises means for aggregating the physical addresses of the storage devices into
3 logical addresses and making the logical addresses available over one connection.

1 21. An access device, comprising:
2 memory for storing data therein, and
3 a processor, coupled to the memory, the processing being configured for
4 structuring access to physical addresses of the multiple storage devices and providing
5 access to each of the multiple storage devices over one connection.

1 22. The access device of claim 21, wherein the processor virtualizes the
2 logical addresses as at least one aggregate volume to provide a layer of abstraction to the
3 storage devices.

1 23. The access device of claim 21, wherein the processor aggregates the
2 physical addresses of the storage devices into logical addresses and makes the logical
3 addresses available over one connection.

1 24. A storage system, comprising:
2 a plurality of packages for providing high density storage, each package
3 comprising a carrier housing for holding multiple storage devices proximate to one
4 another and aligned in a row and an access device, coupled to the carrier housing, for
5 structuring access to physical addresses of the multiple storage devices and providing
6 access to each of the multiple storage devices over one connection;
7 an enclosure for holding the plurality of the packages for providing high-density
8 storage;
9 a package aggregator, coupled to the plurality of packages for providing high
10 density storage, the package aggregator providing connections to each of the plurality of
11 packages for power, control and signaling; and
12 a system level controller, coupled to the plurality of packages, for implementing a
13 desired storage system configuration.

1 25. The package of claim 24, wherein the access device further comprises an
2 address aggregator for aggregating the physical addresses of the storage devices into
3 logical addresses and making the logical addresses available over one connection.

1 26. The storage system of claim 25, wherein the address aggregator is
2 configured to present the storage devices as a single storage device.

1 27. The storage system of claim 25, wherein the address aggregator is
2 configured to allowing each of the storage devices to be addressed individually using
3 logical addresses.

1 28. The storage system of claim 24, wherein the system level controller is
2 configured to provide logical volume aggregation across the plurality of packages.

1 29. The storage system of claim 28, wherein the system level controller
2 presents a desired RAID configuration across the aggregated logical volumes.

1 30. The storage system of claim 24, wherein the system level controller
2 presents a desired system level RAID configuration across the plurality of packages.

1 31. The storage system of claim 24, wherein the access device further
2 comprises a package controller for virtualizing the logical addresses as at least one
3 aggregate volume to provide a layer of abstraction to the storage devices.

1 32. The storage system of claim 31, wherein the system level controller
2 presents a system level RAID configuration across the plurality of packages and each
3 package controller presents a package level RAID configuration across the plurality of
4 storage devices therein.

1 33. A method for providing high density storage, comprising:
2 holding multiple storage devices proximate to one another and aligned in a row;
3 and
4 providing structured access to physical addresses of the multiple storage devices
5 over one connection.

1 34. The method of claim 33, wherein the providing structured access to
2 physical addresses of the multiple storage devices over one connection further comprises
3 aggregating the physical addresses of the storage devices into logical addresses and
4 making the logical addresses available over one connection.

1 35. The method of claim 33, wherein the providing structured access to
2 physical addresses of the multiple storage devices over one connection further comprises
3 virtualizing the logical addresses as at least one aggregate volume to provide a layer of
4 abstraction to the storage devices.